

**Wuppertal Institute**  
for Climate, Environment  
and Energy

# **Combining theoretical and empirical evidence: Policy packages to make energy change in appliances happen**

Session 2

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# Introduction

- What are the best policies and measures to stimulate energy efficiency in appliances? There is still no magic formula!
- All members of the appliance value chain must act in the same direction, or else the energy efficiency chain will break.
- Therefore, the specific barriers and incentives of all relevant actors must be analysed to understand more thoroughly why they often do not implement energy efficiency.
- → Goal: Tailored policy packages to remove the barriers and strengthen the incentives identified
- Cross-check with reality: implemented and successful policy packages

# Project context: bigEE – Bridging the information gap on energy efficiency in buildings



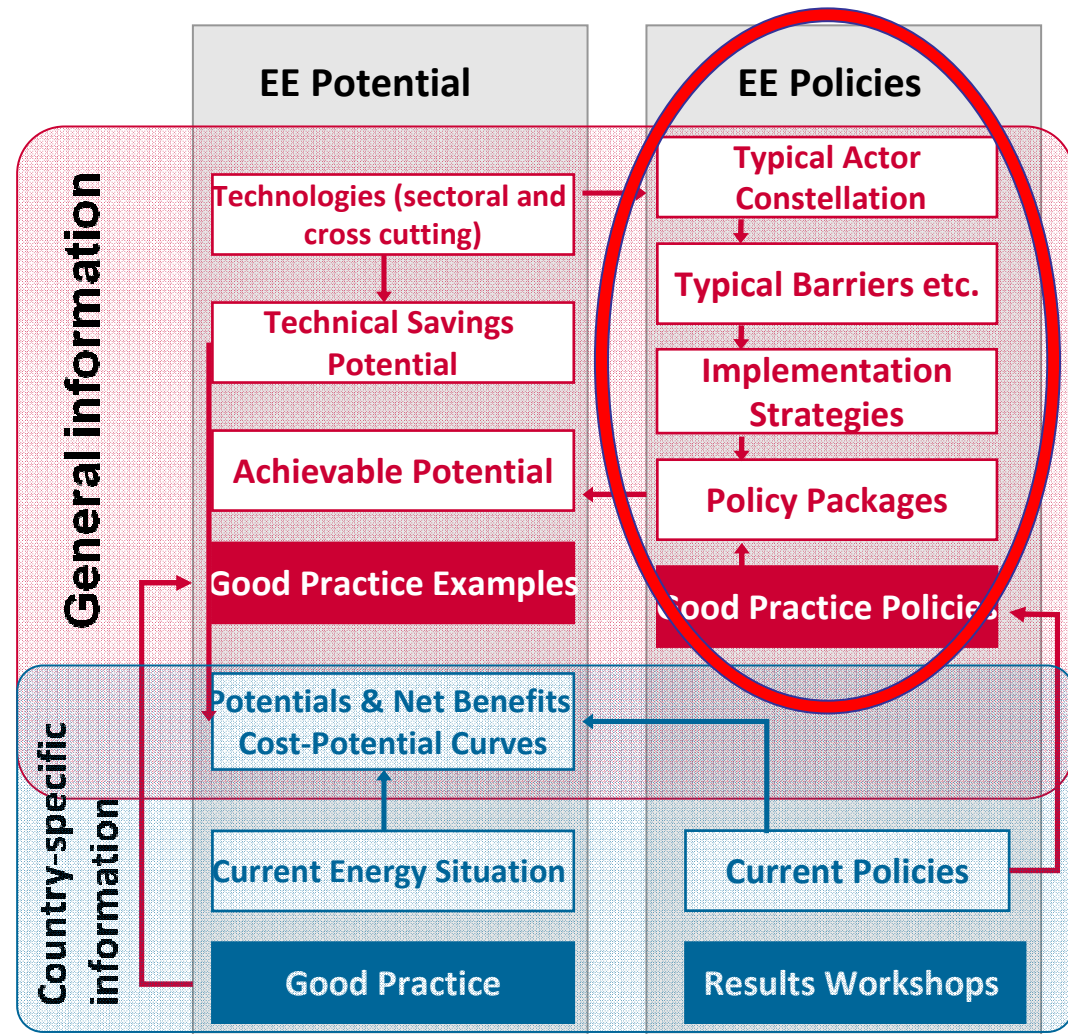
## The bigEE web portal will cover

- residential buildings
- commercial / public buildings
- industrial sector related building technologies
- appliances

## and will include information on

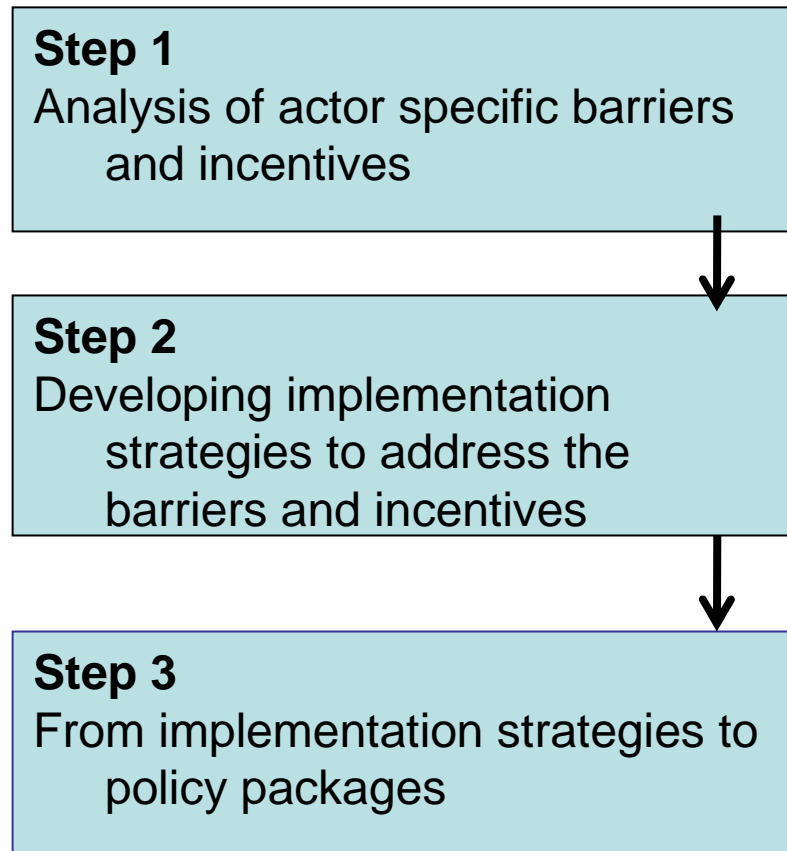
- technologies
  - saving options and potentials
  - actor constellations
  - policies and measures
  - good practices
- on
- international and
  - national level.

[www.bigee.net](http://www.bigee.net) -  
from November 2011

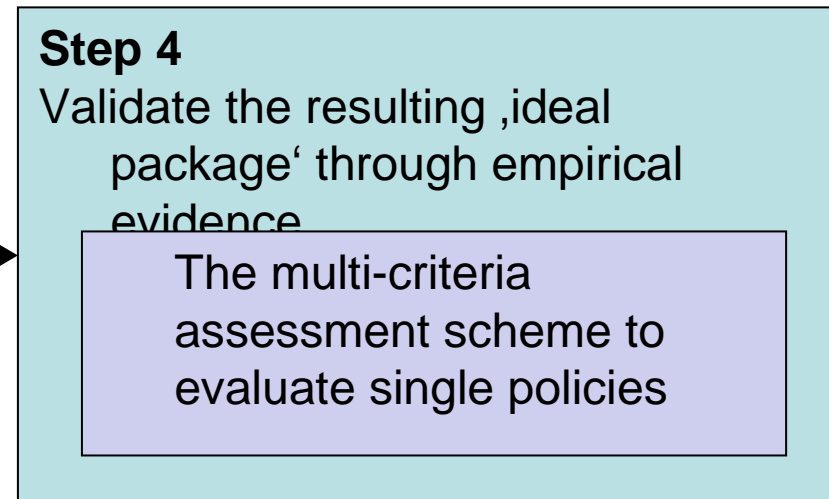


# Methodology

## Actor-oriented theoretical analysis

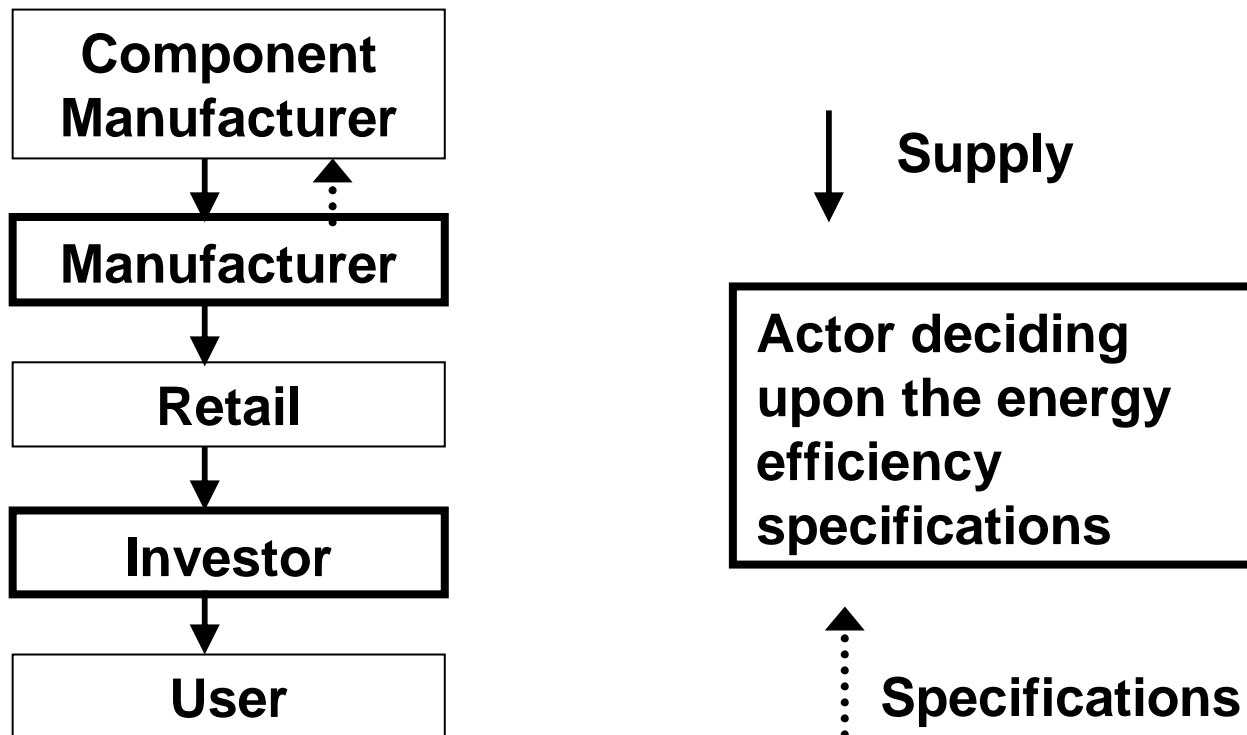


## The empirical proof



# Step 1: Analysis of actor-specific barriers and incentives

Example: Investor is *not* user; manufacturer produces itself



# **Step 1: Analysis of actor-specific barriers and incentives (example: manufacturers)**



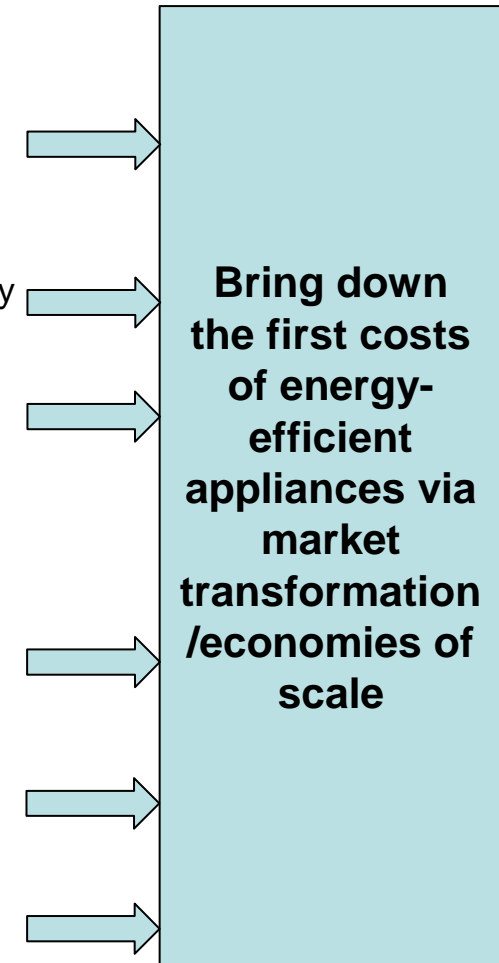
## Step 2: Developing implementation strategies to address the barriers and incentives

### Barriers tackled

- (Manufacturers, retailers, wholesalers) Prevailing price competition or predominance of other product features over energy efficiency; therefore low priority by manufacturers and low willingness to pay (more) for energy-efficient products.
- (Investors, users) Lack of motivation because savings are too small, uncertainty about level of benefits and costs (is it worth it?), other priorities etc.
- (Investors, users) Lack of capital real or perceived costs, innovations only with short payback period

### Incentives strengthened

- (Investors) save energy costs. The energy efficient product is often the cost effective solution
- (Investor  $\neq$  user, manufacturer) Increase value of the property; from a supply perspective, this means higher revenues and possible higher profits. Justification for higher prices
- (Manufacturers, users) Contribution to protect the environment



## Step 3a: From implementation strategies to policy instruments

### Policy options for the implementation strategy

Bring down  
the first costs  
of energy-  
efficient  
appliances via  
market  
transformatio  
n/economies  
of scale



- Economic incentives for very energy-efficient new appliances
- Direct subsidies, grants, rebates
- Tax rebates and other tax incentives for very energy-efficient appliances
- Soft loans
- Promotion of innovative financing schemes such as on-bill financing, functional services, pay as you save (PAYS) schemes
- Energy efficient public procurement for BAT or energy performance levels even better than BAT
- Technology procurement
- Bulk purchasing and co-operative procurement
- ...

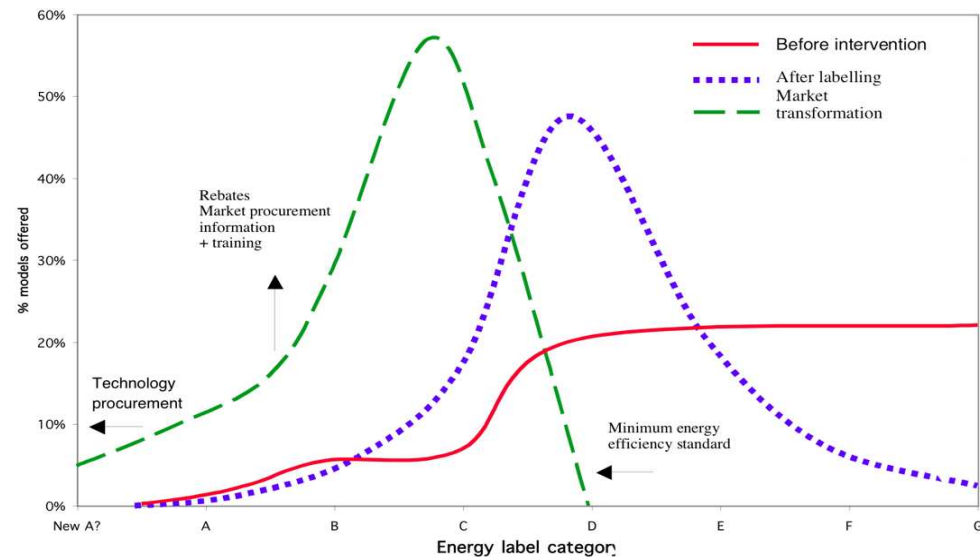


*Some instruments are alternative to each other, but usually several instruments should be coordinated in an adequate policy package to establish synergy effects and realise the implementation strategy*



## Step 3b: An 'ideal' policy package for appliances

- Every policy measure has its own advantages, ideal target groups and specific operational mechanisms. Each is tailored to overcome one or a few certain market barriers, but none can address all barriers
- Most instruments achieve higher savings, if they operate in combination with other measures, and often these impacts are synergistic, i.e. the impact of the two is larger than the sum of the individual expected impact
- However, some instruments alternative to each other: too many instruments could confuse market actors



## **Step 4: Validate the resulting ,ideal package‘ through empirical evidence**

- As the most advanced countries show, the policy package that we derived from our actor-centred analysis comes close to what countries have introduced to approach very high levels of energy efficiency
- **Examples of policy packages** can be found in :
  - The Netherlands 2002/03 (EU MEPS, EU label, national rebate programme, Energy+ EU-wide procurement)
  - Brazil (Replacement and recycling programme, label, MEPS)
  - Japan (TopRunner, label, Ecopoint scheme, recycling programme)
  - California (long term strategy, MEPS, label, Utility DSM incentive programmes and programme for low income households, ‘golden carrot’)
  - ...

## **Step 4: The multi-criteria assessment scheme to evaluate single P&Ms and packages**

### Selection based on **10 criteria**:

- Policy is implemented and not too old;
- Well-designed: addressing market players and barriers, avoids lost opportunities and lock-in, dynamic efficiency levels, lasting results and spill-over effects;
- Innovative (elements or package) and promoting high energy efficiency standards (BAT or LLCC);
- Evaluated and cost-effective;
- Achieves high energy savings per unit and overall;
- Has no negative side-effects;
- The model examples cover many world regions

## **Step 4: The multi-criteria assessment scheme to evaluate single P&Ms**

- Example for policies which were (successfully) evaluated by the multi-criteria assessment scheme:
- EnergiePremieRegeling (implemented from 2000-2003)
  - Programme offered cash rebates for the purchase of higher energy efficiency household appliances, like refrigerators, washing machines
  - Well designed: avoided lost opportunities, rebound effect could be minimised, proportion of A labelled appliances doubled and prices decreased; kick-started market for A+ and A++ cold appliances in 2002/03 by targeting rebates
  - Intelligent policy package, with EU energy label, MEPS, Energy+ co-operative procurement programme, and targeted information of buyers
  - Programme was evaluated and probably cost-effective
  - Energy savings of 30 GWh/year and 0.3 million tons of CO<sub>2</sub> (until 2002)
- Other examples are the Brazilian refrigerator replacement programme, the EU energy label, Energy+, ...

# Conclusion

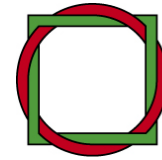
- There is not one silver bullet that will transform the appliances market overnight - instead we need consistent policy packages, carefully tailored to the needs and incentive structures of all actors in the appliance value chain.
- The actor-centred theoretical analysis can guide policy makers in defining an effective set of policies appropriate to national circumstances.

**Full version: [www.bigee.net](http://www.bigee.net)**

- However, the lack of thoroughly documented and evaluated policies makes it very difficult to identify good practice examples, compare their effectiveness and enable others to learn from them.

**Our key message for policy makers is therefore...**

**...it is crucial to consider already in the policy design phase both the incentive structures of the actors concerned *and* the data needs for monitoring and evaluation.**



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**Many thanks for your attention !**



For further information  
please visit our website:

[www.wupperinst.org](http://www.wupperinst.org)

And our project website with a full  
analysis of the presented approach:

[www.bigee.net](http://www.bigee.net)